

CLAIMS

1. A polycrystalline diamond abrasive element, comprising a layer of polycrystalline diamond bonded to a substrate along an interface, the polycrystalline diamond layer having a working surface opposite the interface and an outer peripheral surface extending between the working surface and the interface, the polycrystalline diamond abrasive element being characterised by having an annular region adjacent the peripheral surface extending away from the working surface, the annular region or a portion thereof being lean in catalysing material.
2. A polycrystalline diamond abrasive element according to claim 1, wherein the polycrystalline diamond layer also has a region adjacent the working surface which is lean in catalysing material.
3. A polycrystalline diamond abrasive element according to claim 1 or claim 2, wherein the lean region(s) extend(s) into the polycrystalline diamond from the peripheral surface and/or working surface to a depth of about 30µm to about 500µm.
4. A polycrystalline diamond abrasive element according to any one of the preceding claims, wherein the annular region extends from the working surface towards the interface to a depth of at least half the overall thickness of the polycrystalline diamond layer, but stops short of the interface by at least about 500µm.
5. A polycrystalline diamond abrasive element according to any one of the preceding claims, wherein the polycrystalline diamond layer also has a region rich in catalysing material.

6. A polycrystalline diamond abrasive element according to claim 5, wherein the catalysing material is present as a sintering agent in the manufacture of the polycrystalline diamond layer.
7. A polycrystalline diamond abrasive element according to claim 5 or claim 6, wherein the region rich in catalysing material itself comprises more than one region, which differ in average particle size or chemical composition.
8. A polycrystalline diamond abrasive element according to any one of the preceding claims, which is a cutting element.
9. A polycrystalline diamond abrasive element according to any one of the preceding claims, wherein the polycrystalline diamond is of a high grade.
10. A polycrystalline diamond abrasive element according to any one of the preceding claims, wherein the substrate is a cemented carbide substrate.